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Are they all the same? Benefit realisation from e-marketplaces

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Abstract

This paper addresses the issue of benefit realisation from e-marketplaces and examines whether there are significant differences in benefit recognition according to the type of e-marketplace used. An empirical study of two marketplaces and one buying organisation is used to analyse how the realisation of benefits may vary according to different e-marketplace models. A comparison is made between an intermediary and a consortium marketplace before the benefits achieved by the buying organisation are discussed. The study found that although there were distinct differences between the e-marketplaces, many benefits are achievable from both. Benefit realisation was influenced more by the buyer's procurement strategies than by the features offered.

Keywords

E-marketplaces, procurement, Quadrem, FreeMarkets, benefits

INTRODUCTION

The electronic marketplace environment is a dynamic and vibrant addition to the business landscape. The development of such marketplaces has increased dramatically since the adoption of the Internet and use of the Web for business purposes. The promise of benefits to be gained from online trading through such marketplaces is eloquently described in the business press and industry reports (Downes & Mui, 1998; Forbes, 1999; Forrester Research, 2000; Modahl, 2000; Morgenthal, 2001). Research into the business models and structures of the market makers is well documented (Brunn, Jensen, & Skovgaard, 2002; Stockdale & Standing, 2003) and the turnover from online trading is reported in the trillions of dollars (Forrester Research, 2000). However, the environment remains immature and subject to swift changes and some instability.

An initial boom in the launch of marketplaces in the latter part of the 1990s has been followed by a period of consolidation. The initial proliferation of industry sector marketplaces is illustrated by the identification of 28 e-marketplaces in the forest and building products industry in 2000 (Industry Canada, 2000) and 17 major e-marketplaces in the mining industry (Ludeman, 2001). Competition, inadequate revenue models and failure to achieve critical mass has led to a severe consolidation of marketplaces. In the mining and metals sector three major players, MetalSite, MetalSpectrum and Aluminium.com.Inc closed their doors within three months (Clark, 2001) and by 2004 virtually none of the 17 marketplaces remain. The dominant marketplace in the industry is the consortium marketplace, Quadrem, established by mining organisations in 2000.

The swiftly changing landscape of online trading has seen a shift in the governance of e-marketplaces. The early movers were generally intermediaries, but by 2000 consortia marketplaces were being established in the major industries. Intermediary marketplaces have altered their strategies with many moving towards the software solutions model rather than the transaction orientated facilities for matching buyers and sellers. Converge is one such example that has moved from a marketplace for transactions in the hi-tech wholesale industry to establishing a reputation as the 'largest global independent distributor of electronic components' (Bowles, 2004).

Selection of a marketplace can be seen to be a difficult decision for prospective participants. Research into such decision making has been developed (O'Reilly & Finnegan, 2002; Standing, 2001; Stockdale & Standing, 2002), but has not addressed the question of how the different models and structures of marketplaces affects the realisation of benefits from a buyer's perspective.

This paper contributes to the cumulative research on e-marketplaces. It builds on existing research into e-marketplace participation (Bakos, 1998; Brunn et al., 2002) by examining whether there is significant diversity in benefit recognition from different types of marketplace. This will enable more informed decision-making by

practitioners and support clearer insights into the ways that realisation of benefits from e-procurement strategies can be achieved.

THE CURRENT E-MARKETPLACE ENVIRONMENT

To select a definition of an electronic marketplace is a difficult task, although there is general consensus that they should be regarded as interorganisational information systems (Bakos, 1991). The many perceptions vary according to the recognition of stakeholders and the level of functionality displayed by the marketplace. This study uses a broad inclusive description to encompass the wide variety of business models identifiable on the Web and in the literature (Kaplan & Sawhney, 2000; Piccinelli, Di Vitantonio, & Mokrushin, 2001; Raisch, 2001).

An interorganisational information system that allows multiple buyers and sellers, and other stakeholders, to communicate and transact through a dynamic central market space, supported by additional services.

Within this definition there are several identifiable constructs that influence how market makers structure their marketplaces and encourage participation through the identification of benefits. The constructs include ownership, transaction mechanisms, payment methods and value-add facilities. The wide variety of anticipated benefits, many based on anecdotal rather than empirical evidence, are derived from the central arguments for the adoption of electronic markets based on the constructs of transaction costs and the role of the intermediary. In the case of the former there is wide consensus that electronic markets reduce the coordination costs identified in transaction cost literature (Bakos, 1998; Brunn et al., 2002; Tumolo, 2001). In the latter case, identification of the role of e-marketplaces as intermediaries provides a strong argument for their development and use (Sarkar, Butler, & Steinfield, 1995; Steinfield, Kraut, & Plummer, 1995). The value-add that intermediaries can offer through additional services are reputed to offer considerable benefits to participants. Table 1 summarises a list of benefits identified from the literature that are attributed to e-marketplace participation. The list represents a strong argument for participation if such benefits are attainable.

Benefit	Source
Transaction cost savings	(Bakos, 1991, 1998; Clemons et al., 1993; Downes & Mui, 1998; Hess & Kemerer, 1994; Malone et al., 1987; Modahl, 2000; Tumolo, 2001)
Efficient price search	(Bakos, 1991, 1998; Choudhury, Hartzel, & Konsynski, 1998; Malone, Yates, & Benjamin, 1987)
Price competition	(Modahl, 2000)
Speed and efficiency of transaction	(Bakos, 1991, 1997; Hurwitz, 2000; Lin & Hsieh, 2000; Lucking-Reiley & Spulber, 2001; Mahadevan, 2000; Modahl, 2000; Timmers, 1999; Tumolo, 2001)
Network effects	(Bakos, 1991; Tumolo, 2001)
Improved customer service(Personalisation/customisation)	(Bakos, 1998; Tumolo, 2001)
Increased margins	(Bakos, 1991; Mahadevan, 2000)
Reduces inventory levels	(Choudhury et al., 1998; Lin & Hsieh, 2000; Tumolo, 2001)
Flow of information	(Bakos, 1991, 1998; Clemons, Reddi, & Row, 1993; Downes & Mui, 1998; Hess & Kemerer, 1994; Lin & Hsieh, 2000; Malone et al., 1987; Tumolo, 2001)
Extension of buyer/supplier base	(Hurwitz, 2000; Tumolo, 2001)
Extension of market	(Modahl, 2000; Tumolo, 2001)
Value add facilities (e.g. information services, logistic & financial services, data warehousing, delivery tracking, escrow, customer risk management, customer and product information channels, research, consumer reports, selection of supplier)	(Bakos, 1991, 1998; Brunn et al., 2002; Choudhury et al., 1998; Downes & Mui, 1998; Raisch, 2001; Sarkar et al., 1995; Steinfield et al., 1995)
Lower prices	(Tumolo, 2001)

Table 1: List of benefits attributed to e-marketplace participation

However, the benefits listed are not differentiated according to the type or features of any marketplace structure, but rather are applied generally to the concept of online marketplaces. Prospective participants seeking a marketplace to attain specific benefits are likely to experience difficulty in differentiating advantages. While the facilities offered by a marketplace may indicate potential value-add, there is little evidence of how the structure of the marketplace influences benefit realisation.

RESEARCH METHOD

This research seeks to answer the question of how an organisation's realisation of benefits may vary from participation in different types of electronic marketplaces. A descriptive case study design is used to make a comparison between two selected e-marketplaces. A buying organisation (that we shall call Pinjar) that has links to the two different marketplaces is included in the case to examine the differences in potential benefit realisation between the two marketplaces.

Case studies enable the investigation of 'contemporary phenomenon with its real life context' (Yin, 1994) and are ideal for the understanding of the interactions between IT and organisational contexts (Darke, Shanks, & Broadbent, 1998). The rich description that can be drawn from case study enables insights into social action and contributes to informed judgement and understanding across other situations (Klein & Myers, 1999; Schofield, 2002).

Data Collection and Analysis

The use of a case study approach calls for a wide range of data sources to be accessed (Dube & Pare, 2003). Multiple data sources are of great importance in corroborating and augmenting information and in giving insights to the cases. The data sources used in this study include company reports, Website content, business and industry press, promotional material, minutes of meetings, direct observation by the researchers and interviews.

The interviews were used to support the data drawn from other sources, which formed the basis of the comparison between the two e-marketplaces. Ten in-depth interviews of between fifty minutes and three hours were conducted over a two year period. The interviews were conducted with representatives from the e-marketplaces' Australian management teams, the purchasing and procurement managers of the buying organisation and three of their procurement officers. One procurement officer was seconded to Quadrem for twelve months during the research period.

A semi-structured approach was taken with questions drawn from the list of identified benefits (Table 1) to determine how each marketplace saw the benefits they believed to be achievable and to identify those that Pinjar had recognised from two years of e-marketplace participation. Supplementary questions were then asked to elicit perceptions, opinions and intended future directions.

Analysis of the data was an integral and ongoing part of the data collection process. Coding of the texts was carried out to support the comparison being made between the two marketplaces. Codings were initially based on the identified benefits (Table 1) and refined as the analysis progressed and revealed the extent to which each market maker saw benefit realisation within the context of their market. The interview texts were coded and used to corroborate or challenge the evidence drawn from the other data sources.

THE CASE STUDY

Three case organisations, one buying organisation and two e-marketplaces, were selected for this research. The buying organisation, Pinjar, was selected due to its early participation in and experience of an e-marketplace. The organisation has evaluated its participation over a three year period and evaluated the benefits that it has been able to achieve. Pinjar has reached a level of maturity in the e-marketplace environment and is prepared to discuss benefits it could achieve from an alternative marketplace. FreeMarkets, an intermediary e-marketplace specialising in auctions, is the e-marketplace currently being used by Pinjar.

The third case, Quadrem, was selected as representative of an alternative e-marketplace for two reasons. Firstly, it is an industry specific, consortium marketplace specialising in the metals and mining industry of which Pinjar is a member. Secondly, it is the logical alternative marketplace for Pinjar to have selected, as the organisation is one of the founding members of the consortium that owns Quadrem. The reasons for non-participation at this stage are not clear although it appears to be partly due to the marketplace and Pinjar executives selecting different technical platforms. Another factor appears to be that the established brand name of FreeMarkets was perceived by Pinjar's executive to offer greater potential for success than Quadrem, which was still in an embryonic state during Pinjar's planning stage. The context of the three organisations is as follows:

Case 1: The Buyer

Pinjar, a mining organisation, operates globally and employs over 130,000 people in more than 30 countries. It has used FreeMarkets for the procurement of the greater proportion of its operational supplies for over three years, but is also committed to Quadrem as one of the founding owners. Pinjar seconded procurement officers to Quadrem in its development phase and has maintained some links. Pinjar has conducted over 300 auctions in a two year period to purchase a range of operational supplies.

Case 2: The Intermediary Marketplace

FreeMarkets, established in 1995, was one of the first business-to-business electronic marketplaces to take advantage of the Web. It is an intermediary marketplace that specialises in auctions and it has developed a clientele amongst the Fortune 1000 companies.

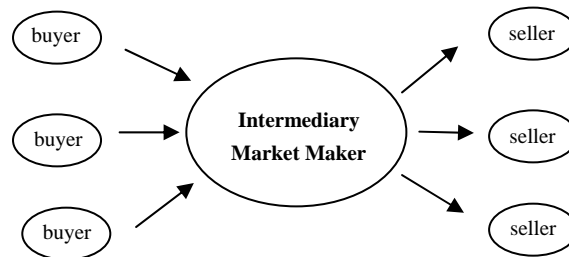


Figure 1: An intermediary marketplace structure

Originally their business model centred on their expertise in running large scale auctions (FullSource) for buyers, using a global supplier database that they have built up over time. FreeMarkets organises FullSource auctions for their clients, using their knowledge and extensive supplier database to set up and run large global auctions. They provide a high level of service to the buyer, assigning project managers to the client, and including training for both buyer and invited sellers, advice on the best way to organise the auction, hosting the actual auction and collating information. For their services they charge a percentage (approximately 1%) of the total value of the auction. In their first five years of operation, FreeMarkets carried out auctions in over thirty countries and operated across nearly sixty different industries (Earle & Keen, 2000); a situation that is reflected in its current operations.

Case 3: The Consortia Marketplace

Quadrem, established in 2000, is owned by a consortium of mining and metals organisations. It offers auctions, negotiation and exchange mechanisms to its participants that register to trade through the marketplace.

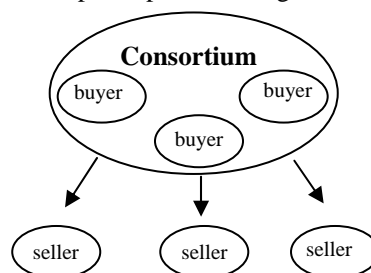


Figure 2: A consortium marketplace structure

Its revenue is derived from licence fees and transaction fees. The original emphasis on the mining and metals industry is showing evidence of moving to a more horizontal market approach as Quadrem seeks alliances and strategic partnerships in other industries. The marketplace is networked to two other e-marketplaces, Dovebid, an auction specialist and Elemica in chemical industry. Quadrem has gained significant ground in attracting buyers and sellers to its marketplace and now advertises 6,500 suppliers and 251 buyers. Its estimated turnover for 2004 is US\$3 billion.

COMPARING THE MARKETPLACES

A wide variety of data sources were accessed to make comparisons between the marketplaces. Interviews with the marketplace staff were used to support the analysis. The significant differences in the business models offered by the two e-marketplaces are summarised in Table 2. The relative simplicity of the FreeMarkets model, compared with Quadrem, highlights the different target participants and the length of anticipated participation. In the case of FreeMarkets, a relationship is expected to be established where they work closely with the buying

organisation to set up Full Source auctions, gaining a close understanding of the needs of the buyer and identifying potential suppliers. In the case of Quadrem, the relationship between market maker and participants is purely functional and the relationships exist between other buyers and sellers. As these relationships are within the same industry there is more likelihood of network effects taking place in Quadrem.

Information sources from the two marketplaces differ greatly. Quadrem, as a vertical marketplace, has the additional emphasis of the value-add of industry information, while FreeMarkets is focused on the auction mechanism and information that facilitates the conduct of an auction. The industry specific information is not seen as a benefit of interest by Pinjar and is not, as yet, a major feature of the marketplace. Its usefulness may lie with suppliers who are seeking to enter the mining and minerals industry, rather than large industry buyers who have developed their own information sources.

E-marketplace features	FreeMarkets	Quadrem
Founded	1995	2000
Ownership	Intermediary	Consortia
Participant base	Horizontal – Global 1000 companies. Buyers	Mining and metals industry – all sizes of firm. Buyers and sellers
Revenue streams	Buyer transaction fee (%)	Buyers/suppliers registration fees and transaction fees
Supplier base	Invited suppliers from vetted supplier base (FullSource only)	Open to buyers/suppliers on registration
Information	Largely company specific	Industry specific
Transaction mechanisms	Auction Some negotiation facility	Auction, catalogue and negotiation
Annual throughput 2003 (source: E-MarketServices.com)	US\$7.5 billion	US\$1.7 billion

Table 2: Comparison of Quadrem and FreeMarkets

Quadrem sees itself as a ‘one stop solution’ for a firm’s supply chain processes. Buyers and sellers can integrate their back-end systems to the sourcing solutions operated by the marketplace, and use the marketplace from ‘source to settle’ in a transaction. Sellers can showcase their products through online catalogues, or take part in auctions and negotiations. The opportunities for trading online with Quadrem are growing and as the number of participants increases, so do the potential benefits. The e-marketplace has faced the same problem of achieving critical mass that faces many market makers: buyers wait for an extensive supplier base to be established and suppliers seek a good range of buyers. Quadrem’s registered buyers and sellers have increased steadily over the period of study.

Quadrem is also developing connections to other online marketplaces and companies. For example, they offer a method of disposing of surplus assets through an auction and valuation firm (Dovebid) and are negotiating to link with another e-marketplace in the chemical industry (Elemica). This follows a general trend that is observable in other marketplaces such as Covisint’s alliance with E-Steel. The potential network effects of this trend will be enormous, as it requires a participant to register with only one e-marketplace, but enables them to have access to the services of the network alliance. Quadrem identified the creation of far reaching networks through alliances with other marketplaces as a future strategy in its very early stages. It recognises its potential to enhance the attractiveness of the marketplace, particularly to suppliers. As participation grows, buyers will have the advantage of greater identification of suppliers at lower cost, albeit with more risk than supplier connections vetted through FreeMarkets FullSource.

Figures 3 and 4 show a comparison of the interconnections identified in the two e-marketplaces that highlights the essential difference between them. The diagrams highlight the essential differences in the relationship between the marketplace and a buyer. Quadrem is a hub that acts as the co-ordination point between buyers, sellers, other customers (these may include logistics firms, finance companies, security consultants and information vendors) and connecting e-markeptlaces. Quadrem does not have a close relationship with any of the participants, but hosts the virtual space through which they trade.

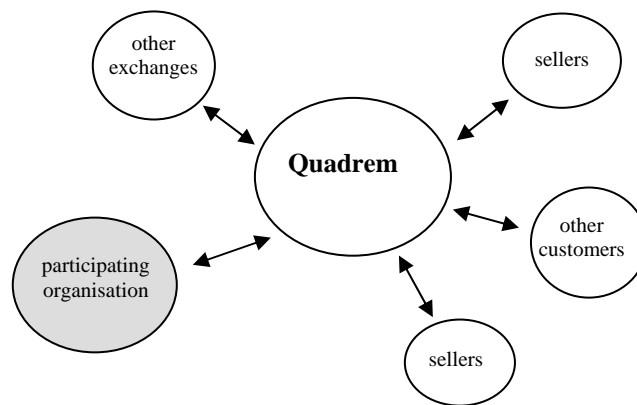


Figure 3: Quadrem Interconnections

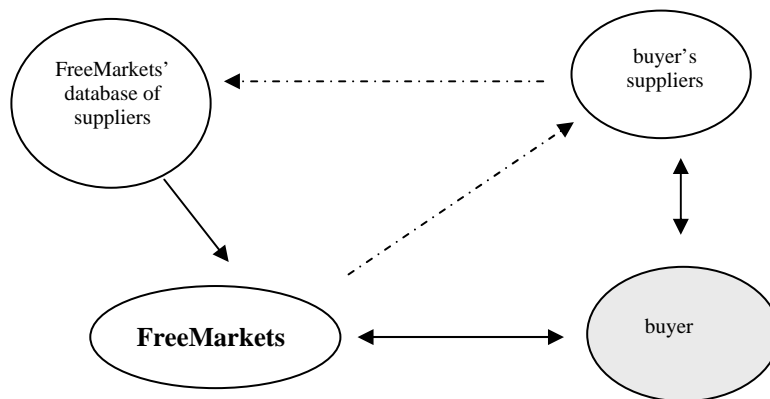


Figure 4: FreeMarkets Interconnections

In contrast, FreeMarkets has a close relationship with its buyer and shares relevant connections from its supplier base. In turn it can absorb buyer's supplier connections into its own database. Benefits drawn from the Quadrem marketplace will be largely selected by the buyer and therefore requires the buyer to know what is achievable and what they wish to achieve from participation. For example, Quadrem hosts the connection to other organisations that may offer value-add facilities, or the connection to the supplier that most suits the buyer. In contrast, FreeMarkets offers a greater personalised service and guides participation to a far greater extent. The ability to choose benefits is therefore more restricted as all connections go through FreeMarkets directly. This may alter as FreeMarkets extends its offerings, such as its newly launched supply chain management package (ES). This is already evident in Pinjar's use of the Quicksourcing option that enables them to tailor smaller auctions to take account of the prevailing conditions surrounding the purchase.

CASE STUDY ANALYSIS

The two e-marketplaces in the study see their primary benefits for participant buyers to be cost savings, improved operations and increased revenues. This accords with the literature which sees transaction cost savings to be the major advantage of e-marketplaces (Bakos, 1991, 1998; Tumolo, 2001) and subsequent benefits to be achievable through the market maker's role as an intermediary (Sarkar et al., 1995). Pinjar's stated aim and single purpose for participation was to achieve cost savings, and the procurement staff were not interested in, and were indeed unaware, of other potential benefits.

Pinjar achieved their aim with recorded savings on historic cost of up to 25% within the first year, an outcome foretold by FreeMarkets. Such savings are advertised by all e-marketplaces offering the auction mechanism and it is possible that Quadrem would also have delivered a comparable saving. The reservations on this assumption from the Pinjar procurement and purchasing managers lay with the perceived quality of FreeMarkets' supplier base. They believed that Quadrem did not have the critical mass to compare in the 2001/2002 timeframe. The level of Quadrem's supplier base has increased and although FreeMarkets offers a great source of suppliers at the FullSource level of auction, Quadrem offers a more general range of suppliers that is freely accessible to registered buyers. These suppliers are self selected and have joined Quadrem to gain contracts in the mining industry and therefore can potentially increase the supplier base available to Pinjar. However, the element of new supplier risk is higher as, unlike FreeMarkets, there is little vetting of suppliers.

The benefit that raised the most discussion was that of information, seen as a key contribution of e-marketplace participation (Bakos, 1998; Tumolo, 2001). Pinjar's purchasing manager was very clear that there were distinct differences in the type of information available from the different marketplaces. The procurement team saw a significant difference between the FreeMarkets information that is concerned with the smooth running of auctions and more generic information, perceived as a facility available from Quadrem that required keen appreciation of its source, intent and application.

As participation in the e-marketplace increased and staff gained confidence in their ability to function effectively in the new environment, their recognition of other benefits became more apparent. Their identified benefits are listed in Table 3 and are broadly similar to those in the literature (Table 1), although Pinjar has recognised transparency offered by the system, market awareness, regaining of governance and potential staff reductions as additional benefits.

Transparency is seen as a benefit of e-marketplace participation, but its outcomes of aggregation of supplier and price information, and assessment of supplier activities are more closely linked to the auction process than the market maker. Such information is not so evident from other transaction mechanisms, but the auction brings together all competing suppliers with pre-bid quotes and bidding activity captured in a short time frame and enabling analysis of each supplier's actions. Internal transparency was initially more problematic as staff struggle to come to terms with the visibility of their work. Auctions were watched by other staff members as part of the learning process and caused some upsets until levels of confidence increased. The procurement manager believed that such transparency would increase in the future, but would support a more integrated team approach as knowledge was shared more effectively.

Cost savings	Information
Time savings	Transparency (Internal and External)
Regaining of governance ceded to some suppliers through informal purchasing methods (re-specification of goods)	Expanded markets
Opening up of the supplier base	Supply chain efficiencies
Increase in e-capabilities	Market awareness
Staff reductions	

Table 3: Identified benefits from Pinjar's e-marketplace participation

Pinjar's increased market awareness for their operational supplies arose through greater knowledge of market price, appreciation of the market's capabilities and transparency of supplier price disparities. The gaining of this knowledge was believed to be related to the speed and visual characteristics of online auctions. Again the ability to capture information and supplier actions in the auction timeframe supports Pinjar's beliefs, although this information would be available in slower time through e-marketplace participation using catalogues and negotiations.

Pinjar's additional perceived benefits of regaining of governance from suppliers and staff reductions were not seen to be directly linked to participation in FreeMarkets, but rather an outcome of changes in procurement processes brought about by new organisational strategies.

Pinjar and FreeMarkets were of the opinion that the potential and realisable benefits of participation were directly related to the online auction mechanism rather than the marketplaces themselves. However, an examination of benefit realisation, particularly in the early stages of participation, closely links it to the relationship established between the parties rather than the transaction mechanism. The Pinjar procurement staff were not involved in the decision to use FreeMarkets, but were tasked with achieving cost savings through the marketplace. Their knowledge of e-marketplaces was minimal in the early stages, despite their contact with Quadrem, and their dependence on FreeMarkets was strong. FreeMarkets' project managers offer a high level of

service, developing a close relationship with their clients. They offer not only a vetted supplier base, but accumulated information on how to run online auctions, advice on when to move to a negotiation mechanism and detailed guidance on re-evaluating tender specifications.

In contrast, Quadrem's level of support is not so defined with more emphasis on its position as an intermediary (Sarkar et al., 1995) rather than in taking a consultative role. The high profile, hands-on intermediary role that FreeMarkets adopts may have contributed to the Pinjar Board's decision to use FreeMarkets despite the all-in approach that this required. As Pinjar has moved towards more use of the QuickSource facility offered by FreeMarkets, their interaction with the marketplace has declined. Their knowledge and confidence has greatly increased and the awareness of potential benefits significantly changed. The organisation now arranges its own auctions using its own supplier database. It is moving away from the intermediary e-marketplace and rather than turn to the consortium, it is developing its own hierarchical model. Pinjar procurement staff believe that they can gain the benefits that Quadrem has the potential to offer by implementing their own e-business solutions. It has an internal online catalogue incorporating a range of suppliers' catalogues, an auction mechanism (FreeMarkets QuickSource), a supplier base partially identified through FreeMarkets and partially by itself, and it is automating payment and tracking services. Where Quadrem can potentially offer Pinjar more than it has developed itself, is from the networking effects that will take place as e-marketplaces develop alliances to share resources. This has the potential to substantially increase the available supplier base, the recognition of new markets, and identification of other participants offering a range of additional services. Early indications of the network trend, denoted by Quadrem with their Dovebid and Elemica alliances, can also be seen in the alliance of E-steel and Covisint reported on the latter's website.

There is also the possibility that the larger mining organisations could seek benefits by concerted purchasing actions through the marketplace, although the anti-trust implications in such a situation have been noted by governments (Federal Trade Commission, 2000).

CONCLUSIONS

There are clearly distinct differences in the two e-marketplaces discussed here and although the range of benefits realisable does differ, there are many benefits that would appear to be common to both types of e-marketplaces. These include e-enablement, time savings, information (albeit at varying levels), access to new suppliers and cost savings.

The principal benefit to be gained from a marketplace such as Quadrem is that of network effects and value add facilities. From the case study findings it appears that the benefits to be gained from different types of e-marketplace are influenced less by the features offered, but rather by the participating organisation's e-procurement strategies. In Pinjar's case, the need for cost savings was the overriding consideration in selection, subsequent benefits were seen as a bonus and additional facilities were not sought.

Participation in FreeMarkets is an option that is not available to many firms as the marketplace is restricted to Fortune 1000 companies. Quadrem has developed into a viable alternative for firms (albeit mainly in the mining and metals industry) seeking to gain benefits from online trading. The differences between the marketplaces appear to be large, but at this stage of e-marketplace development the main distinction appears to be one of concentration of facilities. Pinjar, as a large organisation, is in a position to acquire the facilities it requires as it recognises the need for them and is on the way to developing its own form of private marketplace. Other firms may not have the option or resources to do this and would therefore find Quadrem a more viable e-marketplace than FreeMarkets.

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